California 2003

Nonpoint Source (NPS) Conference

November 5–7, 2003 • Sheraton Four Points Hotel
Ventura, California

Restoring Clean Water:
NPS Pollution Prevention and TMDLs

BIOSKETCHES and ABSTRACTS

Wednesday, November 5

9:00 AM – 9:30 PM

WELCOME SPEAKERS

Arthur Baggett, Jr.
Chair
State Water Resources Control Board
Executive Office
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BIOSKETCH

Mr. Baggett, appointed by Governor Gray Davis, serves as the chair and the attorney member of the five-member State Water Resources Control Board, which is responsible for protecting all water quality and water supplies in California. The Board is also responsible for the allocation of surface water supplies for agricultural, public trust, and urban purposes throughout the State. Formerly an attorney from El Portal, California, he has specialized in water, environmental, business, and family law. He holds an M.S. in Environmental Studies from Antioch College and a law degree from San Joaquin College of Law, where he is currently on the adjudicator faculty. He served two terms on the Mariposa County Board of Supervisors from 1987 to 1995 and is the former chair of the Mariposa County Water Agency. Mr. Baggett is also a former board member of the Mountain Counties Water Association and a past president of the Mariposa County Bar Association. As a scientist and teacher, Mr. Baggett served as a faculty member for the Yosemite Institute, the Sierra Institute of University of California Santa Cruz, the Yosemite Association, and as adjunct faculty at Fresno State University in the Department of Chemistry.

Alexis Strauss
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BIOSKETCH

Ms. Strauss is director of the U.S. EPA's Water Division for the Pacific Southwest Region, with responsibility for implementation of the Clean Water Act, the Safe Drinking Water Act, and portions of the Marine Sanctuaries Act in Arizona, California, Hawaii, Nevada, and more than 140 Tribal governments. Ms. Strauss joined U.S. EPA in 1979, and has worked in the hazardous waste and Superfund programs. She is a graduate of UCLA with a B.A. in 1977 and an M.S. in 1979.

Wednesday, November 5

9:30 AM – 10:00 PM

KEYNOTE SPEAKER

Mark Gold, D.Env.
Executive Director
Heal the Bay
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Biosketch

Dr. Gold has been the Executive Director at Heal the Bay for the past 9 years. He oversees advocacy, legislative, research, and education programs. Dr. Gold also sets priorities and helps create strategic plans and implementation strategies for the organization on issues, programs, communications, development, education, and finance. He was also responsible for the acquisition of the Santa Monica Pier Aquarium (formerly the UCLA Ocean Discovery Center) and helped author numerous state legislations.

Before Heal the Bay, Dr. Gold was a visiting professor at UCLA's School of Public Health. His graduate-level class focused on coastal pollution problems and their potential solutions.

Dr. Gold received his D. Env., Environmental Science and Engineering; M.A., Biology; and B.S., Biology from UCLA.

Session A

Building Sustainable Watershed Stewardship

Wednesday, November 5

10:30 AM – 12:00 PM

Wednesday, November 5

10:30 AM – 12:00 PM

CONCURRENT SESSIONS

Session A

Building Sustainable Watershed Stewardship

Moderator

Shirley Birosik
Watershed Coordinator/Staff Environmental Specialist
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BIOSKETCH

Ms. Birosik is currently watershed coordinator at the Regional Board, where she has worked for 17 years. She has investigated, and worked on remediation for, numerous surface water and sediment contamination problems with particular emphasis on the harbor areas, the Malibu Creek Watershed, and the Calleguas Creek Watershed. She was extensively involved in development of the state's Whole Effluent Toxicity testing approach and has served on technical advisory committees concerned with impacts from boating and marinas. She has worked with watershed stakeholder groups since 1996 as the Board's watershed coordinator, prepares long-range watershed planning documents, and serves as lead scientist for the Board. The latter activity entails involvement with various technical groups including one devoted to development of state nutrient objectives. Ms. Birosik graduated from California State University, Long Beach, with an M.S. in Biology and is a certified ecologist.

San Diego River Watershed

Robert Hutsel
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BIOSKETCH

Mr. Hutsel is the director of projects and programs for the nonprofit San Diego River Park Foundation (SDRPF). He is responsible for the development of a variety of efforts under way to establish the San Diego River Park,

including serving as the liaison to the 49 nongovernmental organizations that make up the San Diego River Coalition.

Mr. Hutsel is the project manager for the coalition and the foundation on master planning efforts for the San Diego River Park, an effort to establish a 51-mile-long greenway park system. He is also the local project manager for the Bureau of Reclamation's San Diego River Restoration Project, a feasibility study on restoring natural functions to the river system to improve water quality and habitat functionality. He is also project manager for several other efforts including NOAA and community-based habitat enhancement programs for the funded Southern California Wetlands Recovery Project.

For more than 10 years, he has been actively engaged in habitat restoration projects throughout San Diego County, especially as it relates to the removal of nonnative invasive plants. Before becoming the Director at SDRPF, he worked for 7 years for locally elected officials on a wide range of issues including park development, planning, housing, and homeless policy.

Previously, Mr. Hutsel served as director of a residential performing and creative arts school in New England, and has also taught environmental education and outdoor leadership programs. He received a B.S. from University of California San Diego in Urban Studies and Planning with an emphasis in Environmental Design.

He is currently serving as cochair of the San Diego River Watershed Management Plan Workgroup as well as on the Board of Directors of the San Diego Presidio Park Council, Friends of Mission Valley Preserve, Black Mountain Open Space Citizens Advisory Committee, and San Diego County Wetlands Task Force. He has received numerous recognition awards for his efforts, including the prestigious 2003 Clean Water Champion Award given by the County of San Diego's Project Clean Water program.

Abstract

Watershed plans are increasingly being used to address nonpoint pollution throughout California. To build support for preparation of a watershed plan and sustain long-term interest in plan implementation, stakeholder involvement, public education, and formation of partnerships are crucial to success. A wide range of community outreach and education tools can be used including establishment of stakeholder groups to discuss watershed issues, development of criteria to require educational content in future projects (e.g., interpretive displays), development of school curriculum materials/programs relevant to the local watershed, development of public educational materials (e.g., native plant lists), citizen monitoring (of water quality and stream health), public events (e.g., stream cleanup, or tree plantings), project development workshops, and electronic media (e.g., Web sites and e-mail). To broaden community support, outreach activities should extend beyond organizations with natural affinity to watershed issues (e.g., environmental groups) and include other community-based organizations (e.g., neighborhood groups, civic associations, and business interests); groups promoting environmental justice; and relevant federal, state, and local agencies. Broad participation in stakeholder meetings, project workshops, stream cleanups, and other public activities fosters interaction between stakeholders and promotes the formation of partnerships between cities; community-based organizations; and federal, state, and local agencies. Formation of partnerships increases options and the potential to obtain funding for projects and plan implementation.

The three-member panel will discuss stakeholder outreach and public education in the development and implementation the San Diego River Watershed Management Plan, the Ballona Creek Watershed Management Plan, and the San Gabriel/Los Angeles Rivers Watershed and Open Space Plan; and how partnerships are crucial to obtain funds necessary to implement subsequent plans, citizen monitoring programs, and projects that reduce nonpoint pollution.

Ballona Creek Watershed Management Plan

Mark Horne
EIP Associates
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Biosketch

Mr. Horne, EIP technical director, has more than 23 years of CEQA and NEPA experience, including management of more than 40 Environmental Impact Reports, Initial Studies/Negative Declarations, and Environmental Assessments. Mr. Horne specializes in public sector projects, including higher education, medical, energy, and water-related projects. Major projects include a Watershed and Open Space Plan for the San Gabriel and Los Angeles Rivers Watershed and CEQA services for the Santa Ana Watershed Project Authority.

Abstract

Watershed plans are increasingly being used to address nonpoint pollution throughout California. To build support for preparation of a watershed plan and sustain long-term interest in plan implementation, stakeholder involvement, public education, and formation of partnerships are crucial to success. A wide range of community outreach and education tools can be used including establishment of stakeholder groups to discuss watershed issues, development of criteria to require educational content in future projects (e.g., interpretive displays), development of school curriculum materials/programs relevant to the local watershed, development of public educational materials (e.g., native plant lists), citizen monitoring (of water quality and stream health), public events (e.g., stream cleanup tree plantings), project development workshops, and electronic media (e.g., Web sites and e-mail). To broaden community support, outreach activities should extend beyond organizations with natural affinity to watershed issues (e.g., environmental groups); and include other community-based organizations (e.g., neighborhood groups, civic associations, and business interests); groups promoting environmental justice; and relevant federal, state and local agencies. Broad participation in stakeholder meetings, project workshops, stream cleanups and other public activities fosters interaction between stakeholders and promotes the formation of partnerships between cities; community-based organizations; and federal, state and local agencies. Formation of partnerships increases options and the potential to obtain funding for projects and plan implementation.

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San Gabriel and Los Angeles Rivers Watershed and Open Space Plans

Belinda Faustinos
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Biosketch

In June 2002, following 4 months as interim executive officer, Ms. Faustinos was appointed the executive officer of the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (Rivers and Mountains Conservancy). This agency's territory encompasses 66 cities and over 1,400 square miles in the San Gabriel and Lower Los Angeles Rivers watersheds. The primary charge of the Rivers and Mountains Conservancy is to acquire and manage public lands within the watersheds, provide open space and low-impact recreational and educational uses, water conservation, watershed improvements, and wildlife and habitat restoration and protection.

Her career in state government began as a Concentrated Employment Training Act (CETA) rehabilitation counselor trainee at the California Institution for Men and California Institution for Women in the Chino area. From 1974 until 1982 she worked for the State Department of Rehabilitation at the East Los Angeles Service Center and rose to the position of Assistant District Administrator. She next worked for the Employment Development Department as the CETA program coordinator for the Los Angeles/Long Beach region making placements in state and local government during a period when that program wound down. In mid 1983, Ms. Faustinos accepted a position with the Secretary of State managing the Los Angeles Office charged with filing articles of incorporation, political reform division, and uniform commercial code filings.

Her tenure with the Santa Monica Mountains Conservancy (SMMC) began in1985 as the Budget Officer. Ms. Faustinos was promoted to Deputy Director in December 1991. She has administered a budget of well over $200 million in capital outlay funds which have been used for the acquisition and improvement of public parkland and educational interpretation programs. She has also served as the Chief Deputy Executive Officer of the Mountains Recreation and Conservation Authority and the Wildlife Corridor Conservation Authority, which have built parks such as the Bosque del Rio Hondo in Whittier Narrows and worked on open space policy issues in the Whittier/Puente Hills corridor, respectively.

A native of southern California, Ms. Faustinos was born and raised in East Los Angeles. She obtained her B.S. from Pitzer College in Claremont in 1973.

Abstract

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The three-member panel will discuss stakeholder outreach and public education in the development and implementation of the San Diego River Watershed Management Plan, the Ballona Creek Watershed Management Plan, and the San Gabriel/Los Angeles Rivers Watershed and Open Space Plan, and how partnerships are crucial to obtain funds necessary to implement subsequent plans, citizen monitoring programs, and projects that reduce nonpoint pollution.

Session B

TMDLs and NPS Challenges: The Truckee River Basin as a Case Study

Wednesday, November 5

10:30 AM – 12:00 PM

Wednesday, November 5

10:30 AM – 12:00 PM

CONCURRENT SESSIONS

Session B

TMDLs and NPS Challenges: The Truckee River Basin as a Case Study

Moderator

Cindy Wise

Staff Environmental Scientist
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Biosketch

Ms. Wise is an environmental scientist with the State of California Regional Water Quality Control Board (Lahontan Region). The primary responsibility of the Lahontan Regional Board is the protection of surface and ground waters of eastern California from the Oregon border to the Mojave Desert.

Ms. Wise has B.S. degrees in both Biology and Environmental Engineering, and a M.S. degree in Natural Resources Management. She graduated from the University of California at Irvine and from Humboldt State University. She has worked on water quantity/quality issues in the Owens Valley, water/wastewater treatment in rural Alaska, and wastewater treatment wetlands in Arcata. For the past 16 years she has been the on staff of the Lahontan Regional Water Quality Control Board focusing in the areas of watershed management, nonpoint source pollution control, wetlands protection, public outreach, and environmental education.

The Truckee River TMDL Collaborative Project

Gayle Dana, Ph.D.
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Biosketch

Dr. Dana received a B.S. degree in 1976, a M.A. degree in 1981 and a Ph.D. in 1997 in Hydrology/Hydrogeology from the University of Nevada, Reno. From 1983 to 1992 she was a research specialist with the Marine Science Institute at the University of California Santa Barbara, where she was project manager for limnological and watershed and snow hydrology studies in the Sierra Nevada Mountains. Dr. Dana is presently an associate research professor at the Desert Research Institute where she conducts research on surface water hydrology and energy balance of desert, seasonally snow-covered, and polar regions. She uses a variety of approaches and tools in her work including field-based (e.g., eddy correlation and water quality measurements), modeling (e.g., hydrochemical and energy balance modeling), and remote sensing. Present research projects include (1) nutrient and sediment source assessment for TMDL development in the Lake Tahoe and Truckee River Watersheds, (2) hydrochemical modeling in a Lake Tahoe watershed, (3) effects of fire on nutrient dynamics in forested watersheds, (4) evaporation from lakes and reservoirs in support of the Truckee River Operating Agreement, and (5) spatially distributed energy balance modeling for climate change detection in Antarctica. Dr. Dana is the Science Advisor to the Truckee River TMDL and Watershed Council, and is a collaborator with the McMurdo Dry Valleys Long Term Ecological Research project.

Abstract

This talk will discuss activities within the Lahontan Region, CWCCB, with a focus on issues related to total suspended solids, turbidity, and challenges inherent in a multiuser watershed.

The Truckee River Biomass Project Monitoring Program

Christian Fritsen, Ph.D.
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Biosketch

Dr. Fritsen is a professor of biology in the Division of Earth and Ecosystem Sciences at the Desert Research Institute (DRI), Reno, Nevada. He received his B.S. in Biology from Montana State University and his Ph.D. in Biological Oceanography from the University of Southern California. He worked on microalgal and bacterial dynamics in Antarctic environments for 8 years during his graduate and post-graduate appointments. He then become a research professor at DRI and an adjunct faculty member to the graduate school at the University of Nevada, Reno where he teaches Advanced Limnology courses and special topics courses related to aquatic

ecology and microbial ecology. His main research interest is the dynamics of algae and bacteria in both temperate and polar aquatic systems and their interactions with the physical dynamics of their ecosystems.

Abstract
This talk will focus on a 2 year effort directed at establishing relationships between nutrient loading and periphyton (attached algae) production in the mid and lower Truckee River Basins.

Linking Groundwater, Surface Water, and Periphyton – Driven Oxygen Dynamics in the Lower Truckee River

W. Alan McKay
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Biosketch
Mr. McKay is a research hydrologist in the Division of Hydrologic Sciences, Desert Research Institute (DRI) in Reno, Nevada. He received his M.S. in Hydrology from the University of Nevada. Mr. McKay's research interests are focused in two distinctly different areas: development of water resources in rural communities in the West African countries of Ghana, Mali, and Niger; and, improving our understanding of linkages between surface and groundwater interaction, and the associated impact on benthic algal communities and in-stream water quality.

Abstract
This talk will focus on the role of land-use activities in determining groundwater–surface water exchange and, ultimately, how loadings related to groundwater impact TMDL analyses.

Session A

Reducing Runoff from Agricultural Sources

Wednesday, November 5

1:30 PM – 3:00 PM

Wednesday, November 5

1:30 PM – 3:00 PM

CONCURRENT SESSIONS

Session A

Reducing Runoff from Agricultural Sources

Moderator

Kathryn McNeill
Environmental Scientist
Central Coast Regional Water Quality Control Board
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Biosketch

Kathryn McNeill received her B.A. in Social Ecology from University of California Irvine with an emphasis in environmental analysis and a M.S. from California Polytechnic State University, San Luis Obispo in Agriculture specializing in watershed science. Ms. McNeill has worked in nonpoint source planning and implementation in the Morro Bay watershed for 10 years, and is currently developing TMDLs for pathogens and nutrients in several impaired waterbodies on the central coast.

Using Grower Outreach for Pesticide TMDL Implementation

Parry Klassen
Executive Director
Coalition for Urban/Rural Environmental Stewardship (CURES)
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Biosketch

Mr. Klassen is executive director of the Coalition for Urban/Rural Environment Stewardship (CURES). He earned his B.S. degree in Agricultural Communications from California State University Fresno in 1981. For the next 14 years, he was employed as an agricultural reporter for numerous farm publications including *California Farmer*, *Western Fruit Grower*, *American Vegetable Grower,* and *Farm Chemicals* magazines. He wrote numerous

articles on agricultural production techniques, marketing, and other subjects related to growing and marketing, farm commodities.

In 1999, Mr. Klassen became executive director for CURES, a nonprofit organization that develops educational and outreach programs on the proper use of pesticides on farms and urban areas. Mr. Klassen and CURES have been actively involved in the Sacramento and San Joaquin Valleys of Central California as agricultural interests prepare to meet the requirements of pesticide TMDLs and the recently enacted Conditional Waiver for Irrigated Agriculture. Mr. Klassen has been active in the Sacramento Valley Water Quality Coalition since its inception and also participates in watershed coalition activities in the San Joaquin Valley. The main emphasis of CURES activities includes outreach and education for growers and crop consultants on management practices to protect surface water, as well as development and refinement of those management measures. Mr. Klassen is also a part time farmer, operating a commercial peach and melon operation near Selma, California.

Abstract

The Sacramento and Feather Rivers are listed as impaired by diazinon insecticide and Regional Water Quality Control Board is in the process of developing a TMDL for the rivers. The diazinon runoff has been traced back to dormant use of the insecticide on crops such as almonds, plums, and peaches. CURES received a 3-year CALFED Watershed program grant that includes grower outreach on best management practices to reduce dormant season pesticide runoff from orchards. The 20-minute presentation will cover some of the materials and programs developed by the grant. These include

- Results from a survey of orchard grower management practices which reveal the types of cultural practices growers currently use to manage pests in the Sacramento Valley, levels of adoption of practices such as filter strips and orchard vegetation, and the level of understanding of water issues among orchard grower. This survey will be repeated in year 3 of the project to gauge implementation levels.
- A review of management practice publications distributed to orchard growers and the rationale behind the approach used in the publications.
- A sampling of feedback that growers typically offer following the presentations.
- Suggestions for groups to consider when they are designing outreach programs for growers on pesticide issues.

Reducing NPS Pollution in Central Coast Vineyards through Implementation of Best Management Practices

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Non Point Source Coordinator
Central Coast Vineyard Team
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Biosketch

Ms. Stimson is the nonpoint source (NPS) coordinator for the Central Coast Vineyard Team (CCVT) and a soil scientist for Komex H20 Science, Inc. (Komex), an environmental and water resource consulting firm.

Ms. Stimson received her B.S. in Soil Science from the California Polytechnic State University, San Luis Obispo. She has worked as an environmental consultant for Komex for 3 1/2 years and as the NPS Coordinator for the CCVT for 1 1/2 years. Her experience with Komex includes groundwater, surface water, and sediment sampling; preparing workplans; report preparation; oversight of well installations, accompanying soil logging and well development; Phase I preparations; and litigation support of abatement proceedings related to MTBE and perchlorate contamination. Her duties with the CCVT have included identifying and setting up demonstration sites at local vineyards, working with staff from the Natural Resource Conservation Service and Resource Conservation Districts to create Best Management Practices (BMPs) to be used at the sites, overseeing the implementation of the selected BMPs, monitoring the effectiveness of the BMPs, using the Global Positioning System (GPS) to map the demonstration areas, hosting field meetings at the demonstration sites, and public speaking at various industry and nonindustry functions.

Abstract

The presentation will discuss the 3-year grant that the CCVT received from the State Water Resources Control Board to assess and reduce NPS pollution in Central Coast vineyards through the implementation of BMPs.

As part of the project, 12 demonstration sites were set up in Central Coast vineyards that were within the Salinas, Santa Maria, and Santa Ynez watersheds. At each demonstration site BMPs were implemented to reduce water, sediment, and nutrient runoff. Monitoring consists of photo documentation, Positive Points System evaluation, and stream monitoring at one of the sites.

Water Quality Planning Outreach and Implementation for Irrigated Agriculture on California's Central Coast

Mary Bianchi
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Biosketch

Ms. Bianchi is the horticulture farm advisor for the University of California Cooperative Extension in San Luis Obispo and Northern Santa Barbara Counties in California. Ms. Bianchi runs a coordinated extension education and research program to San Luis Obispo and Northern Santa Barbara County horticulture industries, including fruit and nut crops, as well as coordinating programs for public service in urban horticulture. Ms. Bianchi also coordinates and cooperates on research and education programs for water and water quality management in irrigated agriculture crops, as well as education programs in nonpoint source pollution self-assessments, and water quality management plans for horticulture and greenhouse nursery growers.

Ms. Bianchi received her B.S. in Soil Science and M.S. in Agricultural Sciences from California Polytechnic State University, San Luis Obispo. She worked as a Staff Research Associate with the Extension viticulture program at the Kearney Agricultural Center before becoming a farm advisor in San Luis Obispo in 1992.

Daniel Mountjoy, Ph.D.
Area Resource Conservationist
U.S. Department of Agriculture
Natural Resources Conservation Service
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Biosketch

Dr. Mountjoy is area resource conservationist for the USDA – Natural Resources Conservation Service in Salinas, California. He develops technical and educational outreach programs for farmers along California's central coast and San Francisco Bay-Delta regions to assist them with conserving natural resources.

Mr. Mountjoy also promotes the development of watershed-based permit coordination programs with local, state, and federal regulatory agencies to encourage the voluntary implementation of restoration projects by private landowners. This work provides him with the opportunity to improve communication between farmers and multiple public agencies.

Dr. Mountjoy earned a Ph.D. in Human Ecology from the University of California Davis for his studies of soil conservation adoption by Japanese, Mexican, and Anglo strawberry farmers in the Elkhorn Slough Watershed. He also holds degrees in Agroecology and Latin American Studies.

Dawn Mathes
Program Coordinator
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Biosketch

Ms. Mathes is the program coordinator for the Coalition of Central Coast County Farm Bureaus, a voluntary, proactive water quality program formed by farmers and ranchers in the watersheds of the Monterey Bay National Marine Sanctuary. The program spans six counties on the Central Coast of California: San Mateo, Santa Cruz, Monterey, San Benito, Santa Clara, and San Luis Obispo. Ms. Mathes manages the program regionally, providing staff support and fund development. She serves as a liaison between the agricultural industry and the regulatory and environmental interests.

Ms. Mathes has a B.S. degree in Conservation and Public Policy from the University of California. She lives on an apple orchard in Aptos, California.

Abstract

The Monterey Bay National Marine Sanctuary is the largest marine protected area in the United States, consisting of more than 5,000 square miles along the Central Coast of California. The Sanctuary is linked to another Central Coast treasure, the agricultural lands in its coastal watersheds. As runoff water is lost from agricultural lands and transported to the Sanctuary waters, they might carry pollutants, such as sediments, nutrients, and pesticides. Developed in collaboration with the agricultural industry, the Monterey Bay National Marine Sanctuary *Agricultural and Rural Lands Plan* (1999) provides detailed strategies to protect and enhance

water quality in the watersheds that flow into the Sanctuary from San Mateo, Santa Cruz, San Benito, Santa Clara, Monterey, and San Luis Obispo Counties.

The Coalition of Central Coast County Farm Bureaus is taking the lead in implementing one of these strategies; facilitating the formation of agricultural Watershed Working Groups and obtaining technical assistance to help farmers develop and implement farm water quality management plans. The University of California Cooperative Extension (UCCE), in partnership with the USDA Natural Resources Conservation Service (NRCS), is carrying out complementary strategies to improve the availability and relevance of technical information to farmers. UCCE and NRCS have developed, compiled and are extending the Farm Water Quality Planning Short Course to Farm Bureau-led Watershed Working Groups. During the Short Course, irrigated agriculture producers receive information on water quality regulations and techniques for self-assessment of nonpoint source pollution problems; management goals for sediments, nutrients, and pesticides; methods for recognizing practices that are already in place that protect water quality; management practices that may be selected for local conditions and crop types; and practice evaluation methods. Most of the practices presented in the short course are drawn from the NRCS list of Conservation Practices that have been developed and evaluated over the past 65 years and are endorsed by EPA as Best Management Practices.

Session B

Reducing Runoff from Urban Sources

Wednesday, November 5

1:30 PM – 3:00 PM

Wednesday, November 5

1:30 PM – 3:00 PM

CONCURRENT SESSIONS

Session B

Reducing Runoff from Urban Sources

Moderator

Talitha Sweaney
Environmental Scientist
Santa Ana Regional Water Quality Control Board
3737 Main Street, Suite 500
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Biosketch

Ms. Sweaney received her B.S. in Chemistry from the University of California Riverside and her MBA from California Baptist University. Ms. Sweaney has worked as a chemist for Centrum Analytical Laboratories and The Coca-Cola Company in addition to conducting inspections for the Department of Toxic Substance Control. For the past 3 years, she has worked with water quality issues pertaining to 401 water quality certifications, grant coordination with stakeholders, and nonpoint source pollution at the Santa Ana Regional Water Quality Control Board.

Using BMPs, Smart Growth and Low Impact Design to Work with Nature in Reducing NPS Pollution

Neal Shapiro
Water Resources Section Supervisor/Urban Runoff Management Coordinator
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Environmental Programs Division
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Biosketch

Mr. Shapiro is a water resources section supervisor and urban runoff management coordinator for the City of Santa Monica's Environmental Programs Division of the Environmental & Public Works Management Department. Mr. Shapiro oversees water conservation and efficiency programs, and urban runoff management

programs. He has been with the city for 4 years. Previously he worked for the City of Los Angeles' Office of Water Reclamation, promoting the use of recycled water, and for a decade with The Jacques Cousteau Society, researching global water issues for films, books, policies, expeditions, and various other educational programs.

Mr. Shapiro attended the University of Delaware, receiving an M.S. in Marine Policy, and the University of California, Santa Barbara, receiving a B.S. in Aquatic Biology.

Abstract

The City of Santa Monica's Urban Runoff Management Program applies low-impact design for new projects and redevelopment for the specific purpose of harvesting runoff for infiltration or treating it before release into the Santa Monica Bay. The Sustainable City Plan dictates that natural resources are used wisely and the environment protected from pollution. The Runoff Management Program incorporates this principle during the design of construction projects, private and public, and requires post-construction BMPs.

The City has had an urban runoff mitigation ordinance since the mid 1990s, requiring that runoff from new construction be reduced. This strategy accomplishes two goals: harvests a local water supply for future extraction and prevents a water pollution problem from entering the Bay. During the plan check process for new projects, developers must show how urban runoff will be harvested and/or treated and released. This presentation focuses on City efforts to incorporate retrofit BMPs within the storm drain system, for the purpose of treating or reducing runoff before it leaves City boundaries and enters another jurisdiction. The City's goal is to have all 13 storm drain outlets outfitted with a BMP system. To date, the City has received many grant and loan funds to pay for the installation of many BMP systems.

Two of the City's largest drains have recycling, diversion, and vortex separation-screening BMPs. The City has received two grants for two-stage BMP systems in two more drain outlets. And the City is applying for three more grants to add additional treatment and harvesting BMP systems. This presentation will describe the different types of BMP systems that the City has installed or is planning to install in the near future, using various types of local, state, and federal funding mechanisms. These systems are designed to act with nature to harvest rainfall for infiltration and improve water quality in the Bay.

Preventing Pollution in North Natomas

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Biosketch

Mr. Decio has been employed at the California Integrated Waste Management Board (CIWMB) for 9 years. He has been involved in numerous projects to encourage businesses and residents to use resource-efficient landscaping practices that reduce green waste, conserve water, and minimize nonpoint source pollution. He is currently working on a pollution prevention campaign in Sacramento to educate residents on the use of proper landscape and home maintenance practices to protect water quality in local waterways and is working with the California Department of General Services to improve landscape management practices at the State Capitol.

Mr. Decio has also worked in the California Materials Exchange (CalMAX) program in which he facilitated the exchange of waste materials between businesses and organizations and was involved in implementing grasscycling public outreach campaigns in the San Francisco Bay Area, the Inland Empire, and Los Angeles. Prior to joining the CIWMB, he worked for 3 years at the Department of Conservation in the Beverage Container Recycling Program.

Abstract

North Natomas is a rapidly growing community north of downtown Sacramento. At build-out, the area will have 60,000 new residents in 11,000 single-family homes and 12,000 apartment units. Storm water detention basins have been constructed in North Natomas to provide flood protection, enhance water quality, and provide wildlife habitat and open space. Water from street storm drains flows directly into these detention basins and is pumped out to the Sacramento River. Seemingly innocent activities associated with maintaining new homes can discharge pollutants into the storm drain system. Overwatering lawns, washing cars, or draining pools and spas can wash pesticides, fertilizers, green waste, pet feces, sediment, oil, antifreeze, grease, and other pollutants into these detention basins and degrade water quality.

The California Integrated Waste Management Board and the City of Sacramento are conducting a pollution prevention campaign to educate North Natomas residents on using landscape and home maintenance practices that will prevent contaminants from flowing into the detention basins. The program will promote the use of environmentally beneficial landscape and home maintenance practices that will conserve water, reduce the generation of green waste; and minimize pollution from fertilizers, pesticides, sediments, and pet waste. The program has two main components:

- Developing the North Natomas Landscape Plant Guidelines for use by developers and landscape contractors on all new landscapes in the North Natomas. The guidelines will specify minimum spacing requirements for plantings to reduce green waste generation and include a variety of water-efficient plants to reduce water runoff and minimize fertilizer and pesticide usage.
- Conducting an educational outreach campaign directed at new residents to encourage the use of landscape and home maintenance practices that will prevent pollutants from flowing into the storm water detention basins, reduce fertilizer and pesticide usage, conserve water, and reduce greenwaste.

Orange County Water District Prado Wetlands—Enhancing Water Quality and Wildlife Habitat

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Biosketch

Mr. Tennant received his B.S. in Environmental Biology from California State University, Northridge and his M.S. in Environmental Studies from California State University, Fullerton. He has worked for the Orange County Water District for the last nine years. The first five years were in the water quality department ensuring that all domestic and city water wells complied with Title 22 drinking water standards as well as surface water investigations throughout the Santa Ana Watershed. For the last four years, he has worked as the Habitat

Restoration Manager in the Prado Basin restoring native riparian habitat and working on endangered species recovery. The primary species of concern are the least Bell's vireo, the southwestern willow flycatcher, and the Santa Ana sucker.

Abstract

In the late 1980's and early 1990's, the Santa Ana River (SAR) was seen to have levels of NO3/N (Nitrate Nitrogen) that exceeded the state drinking water standard of 10mg/l. Because of this, the Regional Water Quality Control Board classified the SAR as an impacted water body with NO3/N being the primary reason. Increased levels of NO3/N within the SAR are caused by agricultural and dairy run-off, as well as discharge from water treatment plants.

Nitrate has three primary impacts on the operations of the Orange County Water District. Since the SAR ultimately becomes the drinking water of nearly 2 million residents of Orange County, increased levels of nitrate cause a health concern. Nitrate can enter the bloodstream and bind with oxygen molecules. This inhibits the uptake of the much-needed oxygen and the individual may take on a blue color, much like suffocating. Infants and pregnant mothers are the most at-risk individuals. A common name for this disorder is Blue Baby Syndrome.

The second impact is environmental. Increased levels of nitrate in the water can lead to a process known as eutrophication. This means that downstream water bodies have large algal blooms due to the increased nutrients available in the water column. At first, the increased algae is not a problem, but as it dies and decomposes, bacteria in the water use up the available oxygen (dissolved oxygen or DO). If oxygen levels drop below a certain critical level (each species has a different tolerance), fish kills are a common result.

Finally, there is an economic impact associated with increased nitrate levels. The nitrate can actually bind with other organic compounds and diatoms located within the water column. When these settle out, they form a confining layer: almost like cement. When this accumulates on the bottom of OCWD's recharge basins in Anaheim, CA, percolation of water into the aquifer is significantly reduced. The OCWD then has to drain the lake and scraped the bottom to remove this layer. While the lake is down, water that could be percolated in the basin passes the system, losing it to the ocean.

To deal with this nitrate problem, OCWD staff began investigating the potential to use wetlands to remove nitrate. Staff conducted tests on some existing duck ponds in the Prado Basin and found that they completely removed nitrate from the water. OCWD then reconstructed and expanded the duck ponds. Currently, the district owns and operates 485 acres of constructed wetlands. Approximately 60 million gallons a day pass through the wetlands, and in the most productive summer months, nearly a ton of nitrate is removed a day. Water enters the wetlands exceeding drinking water standards and exits the wetlands 3-5 days later with non-detectable levels of nitrate.

With the success of the Prado Wetlands, OCWD has initiated a program to create treatment wetlands on each major tributary that enters the Prado Basin. This includes the creation of another 190 acres of wetlands on the Santa Ana River and future projects on Mill Creek, Chno Creek, and Temescal Creek.

Session A

Permit Streamlining to Encourage BMPs on Private Lands

Wednesday, November 5

3:30 PM – 5:00 PM

Wednesday, November 5

3:30 PM – 5:00 PM

CONCURRENT SESSIONS

Session A

Permit Streamlining to Encourage BMPs on Private Lands

Moderator
Bob Neale
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Biosketch

Mr. Neale is the director of the Partners in Restoration program at Sustainable Conservation, a California nonprofit environmental organization. He oversees the overall progress of the Partners in Restoration permit coordination program and works closely with regulators and landowner support agencies, such as the NRCS, and NGOs, to create incentives and remove barriers for private landowners' voluntary conservation activities. Mr. Neale came to Sustainable Conservation from the Peninsula Open Space Trust, a land conservancy in the San Francisco Bay area, where he was the land manager. Before he changed careers and joined the conservation sector, Mr. Neale was a founder and partner of Thunderbolt Transport, a local trucking company. Mr. Neale received a B.A. in English from San Francisco State University.

Salinas River Regulatory Coordination and Permit Streamlining Project

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Biosketch

Dr. Mountjoy is area resource conservationist for the USDA – Natural Resources Conservation Service in Salinas, California. He develops technical and educational outreach programs for farmers along California's central coast and San Francisco Bay-Delta regions to assist them with conserving natural resources.

Dr. Mountjoy also promotes the development of watershed-based permit coordination programs with local, state, and federal regulatory agencies to encourage the voluntary implementation of restoration projects by private landowners. This work provides him with the opportunity to improve communication between farmers and multiple public agencies.

Dr. Mountjoy earned a Ph.D. in Human Ecology from the University of California Davis for his studies of soil conservation adoption by Japanese, Mexican, and Anglo strawberry farmers in the Elkhorn Slough Watershed. He also holds degrees in Agroecology and Latin American Studies.

Morro Bay Partners in Restoration Permit Coordination Program

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Biosketch

Ms. Mangione is a project manager for the Regulatory Branch of the U.S. Army Corps of Engineers, Los Angeles District. Her geographic area of responsibility includes the coastal region of southern San Luis Obispo County.

Ms. Mangione received her B.S. in Zoology from California Polytechnic State University, in Pomona. She has worked in the environmental regulatory arena in coastal southern California since 1990. During that time she has worked as a biologist for an international environmental consulting firm, as an independent consultant on riparian restoration projects, as a Fish and Wildlife Biologist for the U.S. Fish and Wildlife Service, and, for the past 9 years, as a Corps Project Manager evaluating permit requests for public projects in accordance with Section 404 of the Clean Water Act and Section 10 of the River and Harbor Act.

Permit Coordination for BMPs in the San Luis Rey Watershed

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Biosketch

Ms. Madigan has lived in Mendocino County for 27 years. A graduate of Humboldt State University with an M.A. in Environmental Education in 1992, she has worked for public and private programs in education, conservation, fisheries research, and watershed restoration. Ms. Madigan was awarded a National Service Fellowship to develop research on Environmental Service-Learning, and has served as the Navarro River Watershed Coordinator for the Mendocino County Resource Conservation District, through funding provided by the State Coastal Conservancy—Sustainable Conservation' Partners in Restoration for the Navarro Permit Coordination Program.

Session Abstract

Nonpoint source pollution from agricultural and rural lands is a significant source of water quality impairment and habitat degradation. A number of public/private partnerships, offering cost-sharing and technical assistance, have been created to support farmers, ranchers, and private landowners in addressing and controlling nonpoint source pollution on their property. Unfortunately, the time, cost, and complexity of complying with all the different local, state, and federal regulatory permitting processes have become a significant barrier to these voluntary conservation efforts. Paradoxically, the laws created to protect the environment from damage are preventing restoration of damaged lands. The Natural Resources Conservation Service, local Resource Conservation Districts, and Sustainable Conservation spearheaded the creation of the Partners in Restoration (PIR) permit coordination program, a one-stop regulatory process for private landowners implementing specific conservation practices to control erosion and enhance habitat. Piloted in the Elkhorn Slough watershed in Monterey County, and replicated in the Navarro, Salinas, and Morro Bay watersheds, PIR creates a watershed-based program that provides compliance with environmental regulations through a greatly simplified process for landowners.

Representatives of several PIR partnerships will discuss how their organizations use this conservation tool in conjunction with their watershed planning, delivery of technical assistance, and regulatory mandates, and will share their challenges, rewards and lessons learned.

Session B

Grazing and Rangeland Management

Wednesday, November 5

3:30 PM – 5:00 PM

Wednesday, November 5

3:30 PM – 5:00 PM

CONCURRENT SESSIONS

Session B

Grazing and Rangeland Management

Moderator

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Biosketch

Ms. Maxfield is an environmental scientist with the State Water Resource Control Board (SWRCB) where she works in the Nonpoint Source Program Plan Implementation unit. She received a B.S. in Environmental Studies with a minor in Geology from California State University Sacramento. Ms. Maxfield facilitates the Interagency Coordinating Subcommittee on Agriculture which maintains the specific mission of developing collaboration in pollution prevention activities among 28 state agencies that have authority or interest in California agriculture and its affect on water quality.

Making Water Quality Management Decisions on Dairies in the Tomales Bay Watershed

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Biosketch

Mr. Lewis is a University of California Cooperative Extension Advisor focusing on watershed management in Sonoma, Marin, and Mendocino Counties. In this position, he develops and implements projects that integrate natural resource conservation with agricultural viability. To do this, he works with agriculture and natural resource managers to improve water quality and watershed functions through research and education. His

training and background are in geology, as well as water quality and quantity in California oak woodlands. In conducting his thesis research, Mr. Lewis examined 17 years of water quality and quantity measurements from a Sierra Foothills oak woodland watershed. Local experience includes working with agricultural landowners in the Garcia River and Tomales Bay watersheds to development and implement methods of compliance with water quality regulations.

Abstract

The Tomales Bay and its surrounding watershed is valued for its natural and cultural resources. It is home or stopping grounds for over 20,000 resident and migratory birds a year. Threatened coho salmon (*Oncorhynchus kisutch*) spawn annually in the Olema Creek Watershed, a tributary to the Bay. The catchment also has a rich agricultural and maricultural history. Dairy and livestock ranching began in the region around 1850. There are records of a native oyster fishery from 1890 and commercial production of oysters began in 1918. Repeatedly through this history these values have presented a conflict between viable local economies and wildlife habitat integrity. A series of solutions have resulted from these conflicts including county and state assistance to install manure management systems on dairies in the late 1970s and conservation easements purchased by the Marin Agricultural Land Trust from 1980 to the present. Most recently, the Tomales Bay Agricultural Group (TBAG) formed to provide direction and support in water quality management for animal agriculture producers in the watershed. This group has participated on the Tomales Bay Shellfish Technical Advisory Committee reaching consensus on measures to protect shellfish harvesting areas within the Bay. In addition, TBAG members cooperate with the University of California Cooperative Extension to generate water quality data, from 10 dairies and ranches, which are beneficial for management decisions because of their scale and representation of current management activities. Results from this research and other assessments of nonpoint source pollution within the watershed were used to apply for funding through the California Costa-Machado Act (Proposition 13) to implement water quality improving management practices resulting in an award of $750,000 to the Marin Resource Conservation District in March 2003. These funds are being integrated with the Natural Resource Conservation Services Environmental Quality Incentives Program support, providing for implementation of 12 additional projects that originally proposed. This presentation will provide an overview of TBAG formation and history, summary of on-farm nonpoint source pollution assessment, and the plans for implementation of water quality improving practices within the Tomales Bay Watershed.

The Morro Bay National Monitoring Program – A 10 Year Study of Rangeland BMPs

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Biosketch

Ms. McNeill received her B.A. in Social Ecology from University of California Irvine with an emphasis in environmental analysis and a M.S. from California Polytechnic State University, San Luis Obispo in Agriculture specializing in watershed science. Ms. McNeill has worked in nonpoint source planning and implementation in the Morro Bay watershed for 10 years, and is currently developing TMDLs for pathogens and nutrients in several impaired waterbodies on the central coast.

Abstract
For 10 years, the Regional Water Quality Control Board (RWQCB) and California Polytechnic State University (CPSU) monitored the effects of rangeland BMPs in the Morro Bay watershed as a part of the National Monitoring Program (NMP). The Morro Bay NMP project was one of a subset of Section 319 projects nationwide. The goal of the NMP program is to support 20 to 30 watershed projects that meet a minimum set of project planning, implementation, monitoring, and evaluation requirements designed to lead to successful documentation of project effectiveness with respect to water quality protection or improvement.

Chumash Creek and Walters Creek were the focus of the Morro Bay NMP project. Several BMP implementation sites, including two cattle exclusion projects, a privately owned rotational grazing project, and a floodplain restoration project, were also evaluated to gain a watershed-wide characterization of water and habitat quality conditions.

Results of statistical analyses indicate significant positive changes in water quality, including decreased suspended sediment, decreased turbidity, decreased water temperature, stabilized levels of dissolved oxygen, and decreases in fecal coliform as a result of the BMPs implemented at different project sites. Additional information suggests that rangeland characteristics such as forage species composition and production improved and supplemental feed costs decreased following BMP implementation. These data have provided a basis for TMDL development and self-determined nonpoint source implementation in the watershed. The project provided baseline values to establish the framework for a local Volunteer Monitoring Program and a regionally scaled ambient monitoring program. The Morro Bay NMP is part of a continued effort to evaluate long-term effects of BMP implementation on California rangelands and water quality.

NPS Efforts at Bishop Paiute Tribe Reservation

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Biosketch
Mr. Adkins is an environmental specialist in the Environmental Management Office, Bishop Paiute Tribe, Owens Valley, California. Mr. Adkins received his B.S. in Geography from Ohio University and his M.S. in Geology from Humboldt State University. He is a registered certified engineering geologist and has experience in the oilfield, mineral exploration projects, and environmental consulting. For the past 5 years he has worked developing environmental programs for the Bishop Paiute Tribe, such as development of water quality standards, groundwater management, floodplain mapping, wetland development, and technical support of tribal programs. His main research interests outside of work are paleosiesmology and Quaternary geology.

Abstract
The predominant source of NPS pollution of surface waters on the Bishop Paiute Tribe Reservation is pathogenic and nutrient loading. After several years of sampling surface waters the Tribe has determined that its primary source NPS loading is from tail-water stemming from flood irrigation practices. The tribe is implementing six BMPs to reduce this pollution. These BMPs are as follows:

1. Install a flow-through culvert under road grade to provide a means for tail-water to be diverted away from creek.
2. Dig and maintain tail-water culverts.
3. Promote riparian vegetation growth along selected reaches of streams via fencing installation between pasture areas and stream.
4. Educate general council and assignment holders about efficient management of tail-water.
5. Establish a cross-departmental agreement between the Irrigation Committee and the Environmental Management Office fostering communication regarding tail-water management.
6. Modify beaver dams and install underflow drains to prevent shallow flooding of fields.

The tribe is continually monitoring pathogenic and nutrient indicators of NPS. It is expected that this program will aid in reducing the overall NPS pollutant loading to tribal surface waters.

Session A

Sustaining Community-Based Watershed Protection and TMDLs

Thursday, November 6

8:30 AM – 10:00 AM

Thursday, November 6

8:30 AM – 10:00 AM

CONCURRENT SESSIONS

Session A

Sustaining Community-Based Watershed Protection and TMDLs

Moderator

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Biosketch

Mr. Ziegler has been an Environmental Planner employed by the U.S. Environmental Protection Agency, Region 9 in San Francisco since 1985. His current assignment in the Water Division includes managing the California NPS program and being an advocate for implementing this and other water quality programs in a collaborative manner to encourage local watershed protection efforts. Mr. Ziegler's activities include collaboration with the CalFed Bay-Delta Watershed Program. Previous EPA responsibilities have included working on wetlands and land use issues for the San Francisco Estuary Project, and as a Community Relations Coordinator for Superfund sites. Previous to EPA, Sam worked for a few years as a community organizer for an environmental/consumer nonprofit research and advocacy organization in New York State. He has received an M.S. in City Planning from the University of California Berkeley (1985), and a B.A. in Geology and Environmental Studies from the State University of New York at Binghamton (1979).

Learning How to Get Along: Stakeholder Partnerships in the Sonoma Creek Watershed

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Biosketch

Ms. Cornwall is the assistant director of the Sonoma Ecology Center (SEC), a community-based nonprofit organization working toward sustainable ecological health in the Sonoma Valley since 1990. She is a native of Sonoma County. Her B.S. is in biology from University of California Berkeley, and her M.S. is in plant biology from Arizona State University. Her technical background is in wetland and riparian ecology, management, and restoration, with an emphasis on the effects of land use on natural ecosystems. Since joining SEC in 1998, her scope has broadened to include watershed planning, terrestrial habitat connectivity, community-based conservation strategy, and helping to manage a growing nonprofit.

Abstract

For several years, diverse interest groups in Sonoma Valley have been working together on watershed assessment, stewardship, and restoration. The core participants are Sonoma Ecology Center, Sonoma Valley Vintners & Growers Alliance, and the Southern Sonoma County Resource Conservation District, and many other entities have roles. Along the way, we have learned some lessons about collaboration, and we are still learning other lessons. Focusing on our shared interests, we have succeeded in bringing significant grant funding to the Valley and in expanding the influence of local concerns on large agency-led initiatives such as TMDL development and flood protection planning. Particular areas of interest are (1) basing TMDL implementation and flood protection actions on local current field-based data; (2) distinguishing between historical and current land use impacts on problems related to water quality, fisheries, and flooding; (3) sharing data about environmental conditions without violating privacy concerns; (4) raising the level of knowledge in our community about the local landscape, its workings, and the effects that everyday decisions have on it; and (5) preserving a long agricultural tradition while protecting Sonoma Valley's legendary beauty

Onsite Wastewater Treatment System Management in Malibu, California

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Biosketch

Mr. Douglas is responsible for all aspects of decentralized wastewater management and integrated water resources management at Questa Engineering Corporation's Santa Barbara office. He received his B.S. in hydrology from the University of New Hampshire and M.S. in Plant and Soil Science from the University of Vermont. He has 20 years of experience in water resource management in public and private sector positions.

He has extensive experience working on decentralized and small community wastewater projects in Vermont, Massachusetts, and California. He has provided wastewater management training to professionals in Wuhan, China, and Jakarta, Indonesia. He has also worked on a wastewater reuse project for the City of Hebron in the West Bank (Palestine). His interests are in integrated wastewater management, creek restoration, and community involvement in environmental decisionmaking.

Abstract

Management of onsite wastewater treatment systems is a nonpoint source issue. More widely known as septic systems, onsite wastewater treatment systems are a long-term solution to wastewater management, if they are properly managed.

Malibu Creek flows out of a heavily developed suburban area, through Malibu Canyon and into Malibu Lagoon. Surfrider Beach is just outside of the mouth of Malibu Lagoon. Locally, TMDLs for nutrients and bacteria have been set by EPA for the 109-square-mile Malibu Creek Watershed. The TMDLs include onsite wastewater treatment systems in that watershed, and a detailed focus on the onsite systems in the City of Malibu that includes the last square mile of the watershed.

Due to high bacteria concentrations at Surfrider Beach when winter storms breach the barrier beach, the City of Malibu received a Proposition 13 grant to enhance onsite wastewater management, and to improve coordination between the Regional Board and the City of Malibu. The grant project is developing protocols for sharing information and better communication among regulatory agencies regarding onsite systems where there are overlapping jurisdictions. The City is using an operating permit program and tracking the data with a Web-based information management program and a geographic information system to facilitate the process of managing onsite systems. Preliminary successes, challenges, and lessons learned from this ongoing project will be presented.

Many of the issues raised in the Malibu Creek TMDLs are also being addressed by an ongoing risk assessment project that has installed groundwater monitoring wells in the vicinity of the Lower Malibu Creek and Malibu Lagoon watersheds. These monitoring wells will enable a more detailed determination of the potential contribution of bacteria and nutrients to groundwater, to these impaired surface waters. After a year of monthly monitoring (to be completed in April 2004), the project will identify the high risk and high priority areas for wastewater management within the study area.

The objectives of the City of Malibu are to meet local water quality goals, to enable informed local water quality decisionmaking, and to sustain a fact-driven, risk-based onsite wastewater management program. This approach can be replicated by other communities especially in coastal areas where the need for water quality protection is high and onsite systems are viewed as a long term solution for wastewater management.

Rapid Sub-Basin Assessment for Local Working Group: 2002 Farm Bill Prioritization

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Biosketch

Mr. Cocke has been a civil engineer on the Watershed Planning Services staff at the USDA National Resources Conservation Service (NRCS) State Office in Davis, California since 1987. Examples of NRCS projects that he has been involved in include Nonpoint Pollution Management Plans for Escondido Creek in San Diego County and West Stanislaus County, flood damage reduction from large flood events in Riverside County and San Jose, water quality improvement in Stemple Creek and the Estero de San Antonio, and habitat restoration in partnership with the Audobon Society in Yolo County. He has been teaching Wetland Restoration nationally for NRCS since 1996 in Syracuse, New York; Vicksburg, Mississippi; Des Moines, Iowa; Eugene, Oregon; and Idabell, Oklahoma. His main interests are applied hydrology and hydraulics, stream rehabilitation, habitat maximization, and fire rehabilitation. He has a B.S. in civil engineering from California State University in Sacrament and is a Registered Civil Engineer in California.

Abstract

The Sprague River is a major tributary to Upper Klamath Lake and the Klamath River. The river provides habitat for several species of fish that have been recognized as either endangered or threatened by the U.S. Department of the Interior (DOI), Fish and Wildlife Service. The 1,595-square-mile drainage area is a mixture of public lands; private, industrial, and non-industrial forest land; private grazed rangelands; and grazed pastures. The grazed pastures are irrigated and concentrated on the hydric soils of the basin. The beneficial uses of the Sprague River are impaired due to high summer water temperatures and spring snowmelt-associated sediment. The state of Oregon has put a TMDL on the basin for temperature and sediment.

In April 2001, the Klamath Basin gained national attention when the DOI Bureau of Reclamation (BOR) was not able to provide water to the irrigation projects in the upper Klamath Basin due to habitat requirements for fish in Upper Klamath Lake and the Klamath River. The Oregon Klamath Soil and Water Conservation District and the California Lava Beds Butte Valley Resource Conservation District requested the USDA NRCS to help them develop a vision on how to use NRCS 2002 Farm Bill funds to help solve basin problems that could force future reductions in available irrigation water deliveries. A combined team of California and Oregon NRCS state staffs was assembled to assist the districts in helping them solve their resource problems.

In BOR's Biological Assessment, fish habitat in the Sprague River was identified as one of many necessary components for some fish species recovery. The NRCS team developed a Klamath River basin-wide assessment on application of 2002 Farm Bill programs and which sets of practices could be used in each subbasin to best address resource needs in each subbasin. This presentation will review the development of the basin-wide assessment and how the assessment showed how application of 2002 Farm Bill funds and Oregon CREP dollars could address the TMDL issues in the Sprague River. This analysis connected the Sprague River resource issues to the larger basin and increased its priority and available funding.

Session B

Successful Volunteer Monitoring

Thursday, November 6

8:30 AM – 10:00 AM

Thursday, November 6

8:30 AM – 10:00 AM

CONCURRENT SESSIONS

Session B

Successful Volunteer Monitoring

Moderator

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BIOSKETCH

Mr. Burres holds a M.P.A. in Public Policy and Administration from California State University Long Beach and a B.S. in Zoology from San Diego State University. Mr. Burres is an environmental scientist in the Assessment & TMDL Support Unit and serves the Clean Water Team as the citizen monitoring coordinator for Southern California.

During his career in state service he has worked for the Department of Fish and Game as a Marine/Fisheries Biologist (Southern California Sport Fish Research), and Wildlife Biologist (Southern California and Eastern Sierras Land Management, Ecological Reserve Manager-Orange County Wetlands).

San Diego Stream Team

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Biosketch

Ms. Mallett is the coordinator for the San Diego Stream Team (SDST) and also serves as the watershed coordinator for the San Luis Rey Watershed Council. Ms. Mallett received a B.A. in Urban Studies and Planning from the University of California, San Diego in 1991. She worked for 6 years with local nonprofit organizations to develop and implement education outreach programs and also worked as the commercial recycling coordinator serving three coastal San Diego County cities. For the past 6 years she has worked with local Resource Conservation Districts to develop and implement water quality education outreach programs including chemical water quality analysis and benthic macroinvertebrate sampling and processing. She currently volunteers her time to coordinate the SDST, a nonprofit organization that uses citizen volunteers to collect and identify benthic macroinvertebrates.

Abstract

With increased pressure on California's aquatic ecosystems and limited funds necessary to protect them, water quality agencies and concerned citizens must join forces to protect our rivers and lakes. With too few biologists to monitor the myriad of our state's aquatic habitats it is now necessary for citizens to become involved. The SDST is a citizen-based volunteer organization that evaluates the health of San Diego County Rivers and streams by assessing the biological insect community using state and federal protocols. The SDST identifies valued resources and watershed characteristics, and the status and trends of biological resources in and around the aquatic environment; and evaluates the effects of land uses on water quality using various assessment tools including the Index of Biological Integrity. With the use of technical advisors to properly oversee training, field sampling and laboratory analysis, citizen volunteers can collect the data needed to properly assess water quality. Learn how local citizen volunteers can perform quality bioassessment procedures to produce the data necessary to assess the water quality of local rivers, creeks, and streams.

Move Over Plankton, Here Comes Plastic!

Captain Charles Moore
Founder
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Biosketch

In 1994 Captain Moore founded Algalita Marine Research Foundation. In 1995, he launched his aluminum hulled research vessel, Algulta, in Hobart, Tasmania. Since then he has logged over 60,000 miles of research voyages abroad. He helped develop chemical and bacterial monitoring methods for Surfrider Foundation's

"Blue Water Task Force," and developed protocols with the Southern California Coastal Water Research Project for monitoring marine and beach microplastics. He is the lead author of two scientific papers on plastic particulate pollution published in Marine Pollution Bulletin and is a world-renowned investigator in the this field. His latest 7,500-mile voyage was featured in the November 4, 2002, issue of *U.S. News & World Report*, and on the July 13, 2003, edition of National Public Radio's "All Things Considered."

Abstract

Land-based sources of plastic and trash, especially in urban areas of Southern California, are the most significant source of marine debris in Southern California coastal waters. Recent studies conducted by the Algalita Marine Research Foundation and the Southern California Coastal Water Research Project (SCCWRP) published in *Marine Pollution Bulletin* suggest that plastic fragments occur in a mass six times higher than the mass of plankton in the mid-Pacific Gyre, and in near coastal waters of Southern California the average mass of plastic is two and a half times greater than that of plankton. This work was done with no government funding. Plastic debris leaves the land and enters the sea in many different ways. There it cracks apart, without decomposing or "biodegrading," so it drifts in the currents for decades. The debris' fate is to become increasingly toxic through adsorption of hydrophobic pollutants, and to break down into particles of a size, color, and shape that mimic some food preferences of marine life and birds. They might also enter the food web by being indiscriminately ingested by filter-feeding jellies and salps. The plastic particles can act like "poison pills" containing xenobiotics, which are endocrine disrupters.

The presentation recaps several years of cutting edge research aboard the Oceanographic Research Vessel Alguita, owned and operated by Captain Moore, and the important partnerships formed by this grassroots organization with SCCWRP and the California Coastal Commission which resulted in a $500,000 Proposition 13 grant to "Assess and Reduce Sources of Plastic and Trash in Southern California's Coastal Waters."

2003 Coast-Wide Snapshot Day – An Experiment in Coordinated Citizen Monitoring

Bridget Hoover
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Biosketch

Ms. Hoover has been a contractor for the Monterey Bay National Marine Sanctuary since January 1999 and has worked on a variety of water quality issues, including urban runoff and containments from marinas and boating. Prior to her position with the sanctuary, Ms. Hoover spent 4 years working for the Department of Ecology in Bellevue, Washington, as an environmental planner and participating on the Spill Response Team. She has a B.S. in Earth Systems Science and Policy and extensive experience in water quality monitoring. As coordinator of the Monterey Bay Sanctuary Citizen Watershed Monitoring Network, Ms. Hoover provides technical assistance to a wide range of school programs, watershed groups, and government agencies. She provides training, equipment, and data management assistance to volunteer water quality monitoring groups throughout the sanctuary. Ms. Hoover coordinates several sanctuary-wide monitoring events each year, including Snapshot Day, First Flush, and the dry-weather Urban Watch program.

Tamara Doan
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Biosketch

Ms. Doan has been program manager for the Coastal Watershed Council in Santa Cruz, California, since June 2000. She coordinates a variety of water quality programs in the Central Coast looking at baseline water quality and urban runoff issues. Ms. Doan coordinates several regional volunteer monitoring events and programs each year, including "Urban Watch," "First Flush," "Snapshot Day," and "Clean Streams." She also conducts various other kinds of professional watershed monitoring for the organization primarily focusing on fisheries habitat and water quality. Ms. Doan has a B.A. in Environmental Science-Natural History & Conservation. In her position at the Coastal Watershed Council, Ms. Doan provides technical assistance, trainings and training materials, monitoring equipment, and data management systems to a wide range of watershed groups and school programs, and works closely with appropriate scientists, and local and state government agencies.

Abstract

The U.S. Environmental Protection Agency along with the State of California (State Water Resources Control Board & California Coastal Commission) partnered with eight regional monitoring coordinators to implement the state's largest citizen water quality monitoring event. The program relied on these coordinators to ensure that hundreds of groups implement a consistent set of sampling protocols from which we anticipated answering the questions: "What is the quality of the water flowing to the ocean?" (at least on May 17, 2003). The presenters will discuss various aspects of the program and assess the success of this event regarding logistical coordination, data collection, and reporting. Ms. Doan will discuss the programs structure (i.e., coordinator responsibilities, Technical Advisory Committee process, and the responsibilities of the Coast-Wide Team) and evaluate which aspects of the program should continue and which should be modified if this statewide coordination is continued. Ms. Hoover will review the results of the event, outline the data analysis process, and discuss the strength of the quality assurance procedures. Ms. Murano will discuss the implementation of the event from a regional perspective and discuss how this program assists the group achieve other goals.

Session A

Integrated Approach to Meet Emerging TMDL Regulations to Irrigated Agriculture

Thursday, November 6

10:30 AM – 12:00 AM

Thursday, November 6

10:30 AM – 12:00 AM

CONCURRENT SESSIONS

Session A

Integrated Approach to Meet Emerging TMDL Regulations to Irrigated Agriculture

Moderator

Sheila Ault
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Biosketch

Ms. Ault is an environmental scientist and has worked for the State of California for 3 years at the Colorado River Basin Regional Water Quality Control Board in Palm Desert. She is currently working as the community outreach and education coordinator for her region and is very involved with TMDL development and implementation. Prior to her joining the State Team she was a water quality technician at Marine World in Vallejo. Sheila received her B.S. from Sonoma State University in Environmental Studies and Planning with a concentration in Water Quality and Hazardous Materials Management.

Imperial County Farm Bureau's Voluntary TMDL Compliance Program

Nicole Rothfleisch

TMDL Program Director and Interim Executive Director
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Biosketch

Mrs. Rothfleisch is the director of the Voluntary TMDL Compliance Program for the Imperial County Farm Bureau. Mrs. Rothfleisch received her B.S. in Agricultural Business from California Polytechnic State University,

San Luis Obispo. Prior to that, she attended Grossmont College in San Diego as well as the University of Queensland in Brisbane, Australia. She is a graduate of Leadership Farm Bureau and past Chair of Young Farmers & Ranchers. Mrs. Rothfleisch was an elementary school teacher for 1 year before taking the position as the TMDL Program Director for the Farm Bureau. She was born and raised by a farming family in the Imperial Valley and feels she is continuing to help agriculture through her program. Her responsibilities include outreach, education, meeting facilitation, advertising, writing a monthly column for the newspaper, technical assistance, Web site maintenance, and securing funding through grants. She also serves as liaison to the Regional Water Quality Control Board. Mrs. Rothfleisch is a member of the Technical Advisory Committee for the Salton Sea Nutrient TMDL, the Ag Water Quality Coordinating Committee, and is the interim executive director for the Imperial County Farm Bureau. Currently, 90 percent of the farmable acres in the Imperial Valley have voluntarily signed up to comply with TMDLs through her program.

Abstract

The Imperial County Farm Bureau began its Voluntary TMDL Compliance Program several years ago when it became apparent that local farmers were going to have to comply with a new regulatory process known as Total Maximum Daily Loads. Currently there are three silt TMDLs for local waterways to which farmers are required to comply. Farmers are charged with reducing the silt in their irrigation drain water by 505 over the course of the TMDL. A nutrient TMDL is being developed at this time. The Farm Bureau has hired a full-time staff member to administer the program and also works with various consultants to assist with grants, the Web site, on-farm technical assistance and other areas as needed. Various organizations such as the Imperial Irrigation District, the University of California, Davis Cooperative Extension, the County Agriculture Commissioner's Office, Natural Resource Conservation Service, and the Regional Water Quality Control Board also provide assistance to the program. To date, the Imperial Valley has been divided up into 10 hydrologically isolated drain shed areas. The program director facilitates regular meetings of these groups to inform the farms of the most current TMDL status and requirements, give technical assistance and BMP suggestions, and to receive input from the farmers. An Ag Water Quality Coordinating Committee consisting of representatives from the above-mentioned organizations meets on a regular basis to provide direction and assistance to the program director. The program director has conducted an extensive outreach program to inform the farmers and the community about TMDL regulations and to promote membership in the Voluntary Compliance Program. The outreach program consists of advertising through the use of billboards, monthly articles in the newspaper, ads in local magazines and the newspaper, radio announcements and a Web site. Additionally, numerous letters and meeting notices have been mailed to farmers and landowners. Training has been provided in the form of field days, one-on-one consultations, powerpoint presentations, irrigator workshops, a BMP Handbook, and two videos. A Web site has been developed to provide information as well as a more convenient way for farmers to complete and submit required forms to a database. The on-farm consultant has developed farm plans for and assisted farmers one-on-one with getting over 100,000 acres into compliance. He assesses the field sites, documents the condition, prepares recommendations, and provides technical support. It is up to the farmer to actually implement his recommendations.

The first deadline for compliance by farmers was September 1, 2003. This deadline required farmers to submit a Farm Water Quality Management Plan for each individual field to the Farm Bureau database. The Farm Bureau was then required to compile and submit the database to the Regional Water Quality Control Board by September 28, 2003. At that point 90 percent of the nearly 500,000 farmed acres in the Imperial Valley were in compliance with the first step of the TMDL process. These farmers now have 12 years to implement their plans and reduce erosion in their fields by 50 percent.

Funding for this program has been provided by two National Resource Conservation Service FQIP grants for the educational videos, a 205(j) State Water Resources Control Board grant for the planning of the program,

and from here on out 319(h) implementation grants from the state. Match funding has been provided by the Imperial Irrigation District.

Best Management Practices for Farmers Implementing Silt TMDL in Imperial Valley

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Biosketch

Mr. Kalin is a native of Imperial Valley. After receiving a B.S. in Agronomy from California Polytechnic State University, San Luis Obispo, he returned to the Imperial Valley and shared the management of his family's agribusiness operations including farming and a farm drainage tile maintenance company.

Mr. Kalin pioneered the use of a newly declassified color infrared film in 1972 for use in low elevation aerial photography to spot soil and crop problems in agricultural fields.

In 1997 Mr. Kalin became a member of Imperial Irrigation District's Drain Water Quality Technical Advisory Committee and soon after a Technical Advisory Committee member for Region 7, Water Quality Control Board's Alamo River Sediment/Siltation TMDL. He chaired the TMDL's BMPs subcommittee and was instrumental in developing and field testing, on his farm, the most effective BMPs for the sediment/siltation TMDL. In 2001 Mr. Kalin was appointed to the Technical Advisory Board for Region 7, Regional Water Quality Control Boards Salton Sea Nutrient TMDL and was elected as the chairman of the committee. In 2002 Mr. Kalin was hired by the Imperial County Farm Bureau as their On-farm Consultant, where he continues to help farmers meet their obligations of the three sediment/siltation TMDLs in the Imperial Valley.

Abstract

The Imperial County Farm Bureau has gone to great lengths to educate the local farmers on how to comply with TMDL regulations. The first TMDL requires farmers to reduce silt loading in their irrigation drain water by 50 percent. An On-Farm Consultant has been hired through the Farm Bureau's Voluntary TMDL Compliance Program to assist farmers with this process. The consultant, through his personal farming operation, has experimented with numerous BMPs and is confident in addressing problems and making recommendations.

There are three problems being addressed: (1) excessive amounts of soil being eroded off of fields causes an economic loss to farmers/landowners; (2) chemicals such as pesticides and phosphates attach themselves to soil particles and move with the water into drains and rivers; and (3) field erosion causes muddy water in the drains and rivers making it difficult for fish to breathe and see to find their food.

The most important BMP is to make sure that the control structure (drain box) which transfers the water from the farmer's field into the Imperial District's drain ditch is in working condition with three sides and a grade board to control flow. The area surrounding the drain box also needs to be maintained because this is a prime erosion area.

The consultant encourages farmers to, wherever possible, eliminate deep V-shaped drain ditches that allow water to pick up speed, and therefore silt, and to replace them with flat, wide, pan ditches that allow the water to move off the field much more slowly. It is critical to keep the drain water moving off the field as slowly as possible because as water begins traveling in excess of 36 feet/minute, it generally begins eroding the soil. Other methods to slow the water down include furrow control ditches, check dams, and speed bumps.

An erosion barrier commonly used in highway construction is also used to reduce erosion. The mat, woven from various types of biodegradable fibrous material, lies on top of the soil, anchoring it and even allowing plants to grow up through it. The rough, fibrous material slows the water down. Currently it is free to farmers. Allowing grass to grow in drain ditches is another way to anchor the soil and slow the water down.

Other BMPs include sprinkler and drip irrigation, land leveling, level-basin irrigation, pump-back systems, polyacrylamides, and irrigator training.

It is evident that through education, farmers in the Imperial Valley are slowly beginning to change their irrigation practices in order to comply with governmental regulations, as well as to be more environmentally friendly.

New River Wetlands Project

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Biosketch

Ms. Barrett is the New River Wetlands Project outreach coordinator for the Citizens' Congressional Task Force on the New River. Ms. Barrett received her B.S. in Agricultural Biology from California Polytechnic State University, Pomona. She has worked on the New River Wetlands Project since 1997. Ms. Barrett's other interests include biological consulting, specializing in the Flat Tailed Horned Lizard, and vegetation surveys in the Colorado Desert. She has also been the coordinator for the Salton Sea International Bird Festival for the past 2 years and is active as a safety trainer in the field of hazardous materials.

Abstract

The New River was formed in the early 1900s when the Colorado River flooded. An international river, it originates 20 miles south of the Mexican border, flows north through the Imperial Valley to its destination, the Salton Sea.

Along its route, the New and Alamo Rivers acquire nutrients, silt, biological contaminates, and heavy metals, which contribute to the degradation of the Salton Sea. In early 1997, a concerned local organization, Desert Wildlife Unlimited, looked for a solution for the pollution problem presented by these two rivers. This group worked in conjunction with Imperial Irrigation District, U.S. Bureau of Reclamation, Imperial County, California Regional Water Quality Control Board, California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Geological Survey, and U.S. Environmental Protection Agency.

The New River Wetlands Project was implemented to reduce pollution in the two rivers; to improve the quality of water flowing to the Salton Sea; to provide a habitat for wildlife, plants and fish; and to provide recreational benefits.

The project has 2 years of monitoring results and will soon complete the third year. Results are very encouraging and plans are being implemented to expand the project.

Session B

Reducing Sediment from Roads

Thursday, November 6

10:30 AM – 12:00 AM

Thursday, November 6

10:30 AM – 12:00 AM

CONCURRENT SESSIONS

Session B

Reducing Sediment from Roads

Moderator

BG Tackett
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BIOSKETCH

Mr. Tackett is an engineering geologist with the State Water Resources Control Board with experience in grant and contract administration under Proposition 13, and is currently working as the statewide nonpoint source coordinator for the 319 Program. He has worked in regulatory and resource-related venues during his career with the State of California, including the oil and gas, mining, and recycling and waste management industries.

A Comprehensive Approach to Addressing NPS Sediment from County Roads

Sandra Perez
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BIOSKETCH

Ms. Perez received her B.S. in Chemistry from Loyola Marymount University in Los Angeles. She worked with the Trinity County Resource Conservation District and Trinity County Natural Resources in the AmeriCorps Watershed Stewards Project. Since then, she has been working for the Five Counties Salmonid Conservation Program (5C). As assistant program manager she administers various grants and restoration projects, has contributed to the development and analysis of the Direct Inventory of Roads and Treatment program, and oversees the 5C's sediment-reduction program.

Mark Lancaster
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Biosketch

Mr. Lancaster graduated from Humboldt State University with a B.S. in Forest Resource Management with extensive course work in forestry, natural resources planning, hydrology, engineering, and political science. He worked for 10 seasons in fire, timber, engineering, and watershed management for the National Parks and Forest Service. He is a registered professional forester and principal planner for the Trinity County Natural Resources Division of the Planning Department. Since 1997 he has been the program manager for the Five Counties Salmonid Conservation Program, a collaborative effort of the northwestern California counties of Del Norte, Humboldt, Mendocino, Siskiyou, and Trinity.

Abstract

Roads are recognized as one of the biggest sources of sediment delivery to streams. However, road systems are one of the most easily controlled sources of sediment production and delivery to stream channels. The 5C has committed to a long-term, systematic, prioritization-based, sediment-reduction program on county roads to improve the quality of water and salmonid habitat. It consists of an inventory of erosion sources on county roads, development of individual sediment-reduction projects for priority sites, and adoption of a county road maintenance manual that outlines BMPs specifically designed to protect and enhance the quality of water and salmonid habitat.

Development of sediment-reduction projects begins with an inventory of county roads to identify and assess sites for potential sediment delivery to streams, prospective spoil disposal areas, and possible salmonid migration barriers. The 5C uses a Microsoft Access database, known as the Direct Inventory of Roads and Treatments (DIRT), in the field to provide specific figures on how much erosion can be produced by individual sites, record treatments prescribed by trained surveyors to fix each site, map problem sites with GIS, identify maintenance needs, facilitate prioritization of sediment reduction projects, and track the progress of individual projects.

Final prioritization considers additional factors such as cost, management, workloads, financial resources, maintenance and capital improvement plans of local transportation departments, biological factors (i.e., fish passage), regulatory (i.e., water quality violations), TMDL allocation and implementation plans, and project complexity (i.e., permitting and design). A draft model has been developed to easily organize these factors into one ranking system. Based on these results, the 5C seeks funding to help implement individual sediment reduction projects.

All projects use BMPs outlined in “A Water Quality and Stream Habitat Protection Manual for County Road Maintenance in Northwestern California Watersheds” (5C, 2002). The road manual was developed by the 5C in consultation with various state and federal agencies including the North Coast Regional Water Quality Control Board, California Department of Fish and Game, and NOAA Fisheries. Road manual BMPs are also followed by each road/public works department in capital improvement projects.

Reducing Sediment from Roads in Tahoe Through Interagency Partnerships

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Biosketch

Mr. Graham is a certified professional in Erosion and Sediment Control (CPESC) and a senior environmental specialist with the Tahoe Regional Planning Agency (TRPA). Mr. Graham is responsible for managing TRPA's BMP Retrofit Program and has successfully acquired over $1.6 million in grant funds to build this vital program, which is the primary nonpoint source (NPS) program in the Lake Tahoe Basin. As the TRPA Erosion Control Team Leader, he oversees the day-to-day operations of the Erosion Control Team (ECT), including grant administration, the development of a dynamic education and community outreach program, and building capacity within the ECT by hiring and training qualified staff to accomplish a myriad of goals associated with water pollution control in the Lake Tahoe Basin. Mr. Graham is involved with program coordination of two Resource Conservation Districts and the Natural Resources Conservation Service through a Memorandum of Understanding (MOU). He is also responsible for MOU oversight with the Lahontan Regional Water Quality Control Board.

Mr. Graham's prior experience includes environmental consulting work with Advanced GeoEnvironmental, Inc., where he was responsible for the startup, development, and implementation of surface and subsurface geologic and hydrogeologic environmental investigations.

Mr. Graham holds an M.S. in Hydrology from the Geological Sciences Department from California State University, Fullerton. His master's thesis is titled Comparative Analysis of EPA's Watershed Approach in California and Nevada. He holds a B.S. in Geography with an Environmental Analysis concentration, California State University, Fullerton.

Abstract

Background:

Tahoe has a long history of human concern for environmental quality and preservation of its unique natural resource values. The management and protection of a waterbody such as Lake Tahoe is a complex undertaking. A multiagency partnership approach has been essential to reducing nutrient and sediment loads from roads in the Lake Tahoe Basin. Given that the watershed of the Lake Tahoe Basin crosses political boundaries of two states and five counties, a regional comprehensive approach is taken. Thus, a comprehensive approach involving participation from federal, state, and local jurisdictions, as well as individuals has been essential in achieving specific reductions in pollutant loadings.

Planning:

At the state level on the California side of the Tahoe Basin is the California Department of Transportation (CALTRANS) with 68 miles of roadway. The Nevada Department of Transportation (NDOT) is the counterpart with 44.5 center-lane miles. Using a variety of source control methodologies to protect historic cut and fill slopes from erosion has been the preeminent BMP retrofit challenge of these agencies. Management practices to reduce erosion have included combinations of rock riprap slope stabilization, gravity block retaining walls, rolled erosion control mats, and native vegetation. With respect to reducing sediment loads entrained in storm water,

techniques include construction of retention basins, constructed wetlands, hydrodynamic treatment systems, and dissipation with water spreading.

In most cases a master-planning process has been undertaken to identify problem areas, prioritize hot spots, and develop implementation schedules for specific areas of roadway. The process often involves input from a variety of stakeholders including regulatory, engineering consultants, and the road maintenance field crew.

Adaptive Management Approach:
Ongoing water quality monitoring and research foster new approaches to addressing and mitigating sediment loads from roads. A comparative analysis of water quality monitoring results from the Lake Tahoe Basin versus statewide data indicates higher than average inputs for total suspended sediment (TSS), total dissolved solids (TDS) and total phosphorus. Initial data analysis suggests a correlation with road sand and salt applications. Given the unique cold climate of the Tahoe Basin, traditional BMP approaches might not be as effective.

Funding Mechanisms:
Storm water monitoring helps to provide a feedback loop to the project designers and is integral to improving future project designs. Funding for storm water monitoring in the Tahoe Basin is provided through Proposition 13 grants, grants from the U.S. Forest Service CURTEM program, the California Tahoe Conservancy and the TRPA.

Road Removal and Nonpoint Source Reduction at Anadell State Park, Sonoma County

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Biosketch
Ms. Hastings is the senior state park resource ecologist and natural resources program manager for the Diablo Vista District of California State Parks. She is a graduate of the College of Forestry at Oregon State University, and has been with California State Parks since 1976.

Over the last 19 years as a state park resource ecologist, she has been involved in assessing and prioritizing critical natural resource management needs within a variety of State Parks in Northern California. Restoration work has included several major landform restoration projects, wetland and stream restoration, exotic plant and animal removal, native vegetation restoration, and prescribed fire management.

Abstract
Annadel State Park, established in 1971, is a 5,000-acre natural area with tremendous resource values. A backcountry trail system provides the sole access into the interior of the park. These trails really began as roads that were constructed for quarrying and ranching prior to park acquisition. They were poorly sited, excessively steep, and not generally sustainable as a viable road or trail system. Located just 1 hour north of San Francisco, intensive visitor use also caused rapid degradation of the park's trail system. Annual visitor use, which includes mountain bikers, equestrians, runners, and hikers, is estimated to exceed 200,000 visitors. The poor condition of these trails

not only affected the experience of these visitors, but also damaged numerous historic sites and contributed to the deposition of sediment into significant waterways.

Since 1993, a process has been undertaken to evaluate the roads and trails. Nonessential, redundant roads have been identified and, while planning for road removal, more suitable trail alignments have been identified. Public and emergency services participation was significant as those needing vehicle access into the park, along with Annadel's visitors, rallied in support of their continued access or recreational trail preferences. These were sometimes in conflict with resource management objectives which included the reduction of sedimentation and resulting environmental damage.

Three major construction seasons resulted in the remake of Annadel. In 1998, a project was undertaken to convert 10.3 miles of Annadel's degraded roads into narrow trails to be shared by all park visitors. An additional 3 miles of road were fully recontoured and removed. The project aimed to create trails that enhanced the visitor's experience of the park, while minimizing associated impacts.

In 2000, an additional 3 miles of road were converted to trail, and 2 miles were fully recontoured. Three miles of hand-constructed trail were completed to substitute for the roads that were removed. Finally, in 2001, 5 more miles of road were fully recontoured and either fully removed or converted to trail.

Specific equipment operations techniques will be discussed as well as the process undertaken by the State Park's project manager to identify issues, rally support, obtain funding, and implement the work.

Session 9

Designing Effective Project Monitoring Workshop

Thursday, November 6

10:30 AM – 12:00 PM

Thursday, November 6

10:30 AM – 12:00 PM

CONCURRENT SESSIONS

Session C

Designing Effective Project Monitoring Workshop

Moderator

Margie Lopez Read
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Biosketch

Ms. Read is an environmental scientist with the Water Quality Division of the State Water Quality Control Board (SWRCB). She received a B.S. in Chemistry from California State University, Sacramento, and has more than 16 years of experience in the field of environmental sampling, data analysis, and environmental program development. She has worked in environmental consulting with McLaren Environmental Engineering, managing staff at an analytical laboratory, and performing environmental audits for property transactions. She also has 9 years of experience as a superintendent of water quality for the largest water and wastewater utility in the western slope of El Dorado County. Ms. Read's main focus with the SWRCB is that of interagency coordination for California's NPS Program.

Valerie Connor

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Biosketch

Dr. Connor works as a senior environmental scientist in the Division of Water Quality at the State Water Resources Control Board. She supervises the Assessment and TMDL Support Unit, and coordinates staff

responsible for California's Surface Water Ambient Monitoring Program (SWAMP). SWAMP is being designed to be the comprehensive monitoring program for state surface water quality. Other unit responsibilities include managing the Toxic Substances Monitoring Program, Mussel Watch, Coastal Fish Contamination Program, and the Toxicity Testing Program. Her unit also prepares the annual California 305(b) Report on Water Quality, the annual California Beach Closure Report, and the monthly beach closure Internet postings. Before coming to the State Board in 2001, Dr. Connor worked at the Central Valley Regional Water Quality Control Board for 14 years on monitoring and assessment and watershed management. Dr. Connor has an M.S. and a Ph.D. in Zoology from University of California, Davis.

Shakoora Azimi-Gaylon
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BIOSKETCH

Ms. Azimi-Gaylon is an environmental scientist with the Irrigated Lands Program of the Central Valley Regional Water Quality Control Board. Ms. Azimi-Gaylon received B.S. degrees in Chemistry and Biology and an M.S. in Environmental Science and Business Management. Prior to coming to the Regional Board, she had over 14 years experience as a scientist/chemist in environmental consulting and analytical testing laboratories. As a scientist/chemist, her expertise included development and implementation of laboratory quality assurance (QA) programs and project QA plans for government and private sector projects, performing QA audits of environmental laboratories, analytical data validation, data interpretation, development of field sampling plans, and preparation of remedial investigation reports. She joined the Regional Board in December 1999 to work as a project lead for the development of TMDLs for organophosphorous pesticides for the Lower San Joaquin River Basin. In this capacity, she has reviewed and evaluated data to be used in development of the technical TMDL. Since December 2002, she has worked in the Irrigated Lands Program to design a monitoring program for the Regional Board and help coordinate monitoring plans with watershed groups and individuals enrolled in this program. She has taught numerous courses in environmental data collection and analysis at the University of California, Davis and California State University, Sacramento.

William Ray
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BIOSKETCH

Mr. Ray is the quality assurance program manager for the State Water Resources Control Board. His duties include the management of all quality assurance activities conducted by the State and Regional Boards relative

to the collection of data. He provides training and resource assistance to State and Regional Board staff, and the laboratory community. He is currently the SWAMP Quality Assurance Officer.

Mr. Ray has a B.S. in Chemistry from the University of California, Irvine and an M.S. in Chemistry from California Polytechnic State University, Pomona. He has been employed in the environmental laboratory field since 1973 working both in commercial and state testing laboratories, and auditing and assessing laboratory performance.

Abstract

Propositions 13, 40, and 50; and CWA section 319(h) competitive grants require the inclusion of two components of grant project management: measurable performance objectives and reporting on project effectiveness. It is important to identify appropriate methods for measuring and identifying project success. It is necessary to measure both implementation success and effectiveness of the implementation relative to project and program objectives. One of the items grant projects must address is how the project will result in measurable improvements in water quality, watershed condition, or capacity for effective watershed management. Also, grant projects require recipients to develop and implement a "Project Monitoring and Performance Plan." Project proponents can illustrate the success of their project through increased community awareness and participation, increased knowledge of watershed function within the community, increases in watershed partnerships, water quality measurements, estimates of pollution load reductions, acres of wetlands restored, feet of stream channel stabilization, photodocumentation, number of trained volunteers, or other quantitative measures or indicators appropriate for each project. These measures and indicators have been successfully used and are listed as examples that should be modified to fit the needs of a particular project. However, specific types of monitoring might be required if certain tasks are identified as part of a project. For example, if the project is designed to reduce the amount of a specific pollutant entering a waterbody or improve the physical quality of the water (such as temperature, dissolved oxygen, pH), then water quality sampling might be required. Water quality measurements might include before and after, upstream and downstream, or paired plots depending on the project performance objectives. A Quality Assurance Project Plan is also required for projects where water quality monitoring is performed.

This workshop will summarize the specific requirements of the three propositions and the available tools and guidance for successfully developing and implementing a "project effectiveness evaluation." A six-step model will be presented to assist in the development of an effectiveness evaluation. The model will facilitate selection of management goals, a suitable monitoring strategy, a quantification of the degree of certainty and precision that will be possible, what reference conditions are appropriate, and an appropriate spatial and temporal scale. This information can then form the basis of a "Project Monitoring and Performance Plan."

Session A

Stream Restoration

Thursday, November 6

1:30 PM – 3:00 PM

Thursday, November 6

1:30 PM – 3:00 PM

CONCURRENT SESSIONS

Session A

Stream Restoration

Moderator

Ann Riley
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Biosketch

Dr. Riley is the watershed and river restoration advisor for the San Francisco Bay Regional Water Quality Control Board. She has more than 17 years of government experience working in land use planning, water conservation, integrated pest management, and river and floodplain management. Dr. Riley obtained her Ph.D. in floodplain management and river restoration from the University of California, Berkeley, and is the author of Restoring Streams in Cities (Island Press, 1998). Dr. Riley has been involved with several nonprofit organizations. She founded and directed the Waterways Restoration Institute, cofounded the Coalition to Restore Urban Waters and the Urban Creeks Council of California, and worked as executive director of the California Natural Resources Foundation and Golden State Wildlife Federation. She serves on numerous national research and advisory teams and task forces, including the National Academy of Sciences, National Research Council, and Institute for Water Resources, and has drafted legislation for Congress and state legislative efforts.

Bioengineering Techniques used for Streambank Stabilization/Riparian Revegetation along Streeter Creek

Evan Engber
Chief Bioengineer
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Biosketch

Mr. Engber, president of Bioengineering Associates Inc., and chair of the Bioengineering Institute, heads up an engineering contracting firm based in Laytonville, California. He has spent the last 20 years designing and constructing bioengineered solutions to river and stream problems. One of the founding instructors of the Salmonid Restoration Federations *School of Habitat Restoration,* Mr. Engber was awarded EPA's Hal Wise Award in 1994, "*For exceptional leadership in promoting the control of non point sources of water pollution and ecological management and restoration of watersheds.*"

In 1997 he was consultant to the California Resources Agency Department of Fish and Game for *Bioengineered Erosion Control* included for the first time in their, "*California Salmonid Stream Habitat Restoration Manual", Third edition, January 1998.*

For the last 6 years his company's work has focused on helping vineyards and wineries solve critical erosion problems along their streams and is gratified to see that many landowners have recently become concerned with solving ecosystem-level problems.

Abstract

The intent of this presentation is to demonstrate the ability of traditional bioengineering technology to resolve significant bank erosion/loss of alluvial valley soil. The form of the presentation will be a slide show accompanied by a live commentary.

The intent of the landowner was to stop the loss of large sections of streambank/meadow, occurring during winters of high rainfall. Immediately after construction, a flexible stability was achieved, with a shade and shelter, insect and detritus building pioneer riparian occurring in a relatively short time. Air temperatures (using hobo-temp loggers) within the new riparian areas were similar to those within older growth areas.

Another benefit has been the channel's freedom to create increasingly complex configurations of pool and riffle, shoreline, and shape within the larger area of vegetated and flexible stable riparian streambank slope and floodplain. All the bioengineering structures within the channel have good deep pools matching those formed around large trees. Lower water temperatures were the rule.

We will look at Live Willow Brush Mattresses, Woven Willow Deflectors, Live Willow Siltation Baffles, Live Post and Wire Deflectors, Live Willow Washout Protection, Live Vegetated Log Cribs, and Woven Willow Walls.

Much of the presentation will focus on a 90-degree right turn about 275 feet in length that was in 1987 a bare vertical bank 6 to 12 feet tall with a scour pool at the base and a large, growing, bare gravel terrace forcing high flows against the highly erodible Felix Loam bank.

We will look at the use of a Woven Willow Deflector and a Post and Wire Deflector both with Live Willow Washout Protection. An 175-foot long Willow Mattress was built along the most damaged section of bank. We will follow the development of this site from construction in 1987 to the far more flexibly stable, a esthetically pleasant, and ecologically healthy condition of spring and summer 2003.

Sausel Creeks Dam Removal Project

Drew Goetting
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Biosketch

Mr. Goetting is a principal of the Restoration Design Group and has been involved in urban stream restoration for more than 10 years. His expertise is derived from a combination of hands-on installations; professional training in natural channel design; and academic work in the fields of resource management, landscape architecture, and community and regional development. He is currently conducting research on the potential for local flood control districts to implement watershed and community-based stream restoration alternatives. Since 1995, Mr. Goetting has also served as the restoration director for the Waterways Restoration institute. The Institute provided technical workshops on stream restoration throughout the United States to nonprofit, local, state, and federal agencies.

Mr. Goetting's experience in waterways goes beyond his professional work in restoration. For the past 15 years he has extensively explored the rivers of the western United States by kayak. He has paddled well over 3,000 river miles including wilderness expeditions in Alaska, Latin America, and Africa.

Abstract

In the summer of 2001, the City of Oakland, Environmental Services and the Friends of Sausal Creek implemented the Sausal Creek dam removal and channel restoration project in the Diamond Park Canyon of Oakland. The second order channel drains the west slopes of the Oakland hills. Diamond Canyon Park contains the last steep reach of Sausal Creek before it transitions into the heavily urbanized flatlands of San Francisco's east shore.

The project was initiated to address three failing dams that were constructed in the creek in the 1940s. The structures were causing significant erosion problems below each of the dams. The structures had also trapped sediment above the dam which would have been released in the event of a dam failure. In addition to channel instabilities, the canyon walls and creek corridor were heavily invaded by nonnative species of trees, shrubs, and ground covers.

Project goals included the removal of the three dams, realignment of equilibrium channel geometry, inclusion of habitat for the native rainbow trout, and reestablishment of the native riparian plant community. In addition to the design goals, the project also served to solidify local community efforts by formalizing the Friends of Sausal Creek and supporting the development of a native plant nursery.

An Example of Watershed Restoration for the Upper Pit River: Success Through Landowner-Led Conservation

Clifford Harvey
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Biosketch

Mr. Harvey holds a B.S. in Zoology (Southern Nazarene University, 1977) and a M.S. in Natural Resources/ Interpretation - Recreation Planning (Humboldt State University, 1988). Fifteen years of service as a perennial temp with various resource agencies provided experience in project coordination and environmental documentation. Since 1999 he has served as watershed coordinator for the Central Modoc Resource Conservation District, where he leads a program of watershed monitoring and restoration projects. He actively participates in the district's education/outreach programs.

Abstract

A watershed project was undertaken on the South Fork of the Pit River involving levee removal, streambank stabilization, channel redesign, and nutrient uptake. This effort between Likely Land & Livestock Co. (landowners), agencies, contractors, and Central Modoc Resource Conservation District (CMRCD) shows an example of cooperation that can be used to address complex watershed management problems, providing multiple resource benefits. A biotechnical design, by Salix Applied EarthCare of Redding, California, employed a wide range of treatments emphasizing revegetation and channel function. In a 3,000-foot reach, about 2,200 feet of relict levees were removed, and 2,200 feet of riparian treatments were installed including the planting of some 43,000 live willow cuttings. In the process, about 17 acres of wet meadow were protected and 6 acres of wetland/floodplain were created or enhanced. Thousands of yards of potential erosion were prevented. Nutrient runoff from a winter livestock feeding area was isolated and nutrient uptake ponds were established. These treatments were implemented as part of the ranch's Water Quality Management Plan, based on the California. Rangeland Water Quality Management Plan.

This project illustrates the CMRCD objective to address water quality issues in the Upper Pit basin before onerous new regulations become a reality, with the eventual goal being the removal of the Upper Pit River from the 303(d) list.

CMRCD is working with farmers, ranchers, and other landowners to simultaneously support a comprehensive watershed assessment while engaging in watershed restoration projects. By engaging landowner and community participation in all of our restoration projects, we build support for improved water quality management while gaining site-specific knowledge of conditions and feasible management alternatives for the diverse range of ecotypes found in the district. As new watershed plans emerge following the completion of the Upper Pit River Watershed Assessment, this knowledge will enable more timely responses to priority issues that are identified.

All CMRCD projects are tied to the district's active watershed education and outreach program which is based at the Central Modoc River Center.

Session B

Battling Invasive Species

Thursday, November 6

1:30 PM – 3:00 PM

Thursday, November 6

1:30 PM – 3:00 PM

CONCURRENT SESSIONS

Session B

Battling Invasive Species

Moderator

Lauma Jurkevics
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Biosketch

Ms. Jurkevics has been with the State of California for 14 years and in the last 4 years has been involved with the Nonpoint Source Program at the State Water Resources Control Board. She manages five federal NPS grants totaling over $56 million and is the Chief of the Regional Programs Nonpoint Source Unit. Her unit teams have been involved in developing the NPS Program Plan, administering contracts, citizen monitoring of water quality, coordinating Web sites, educating the public on NPS issues and, environmental review of projects receiving federal and state loans and grants. Her professional and academic career has largely been in southern California and included work in coastal development; contaminated harbor sediments; beach closures; environmental monitoring, permitting, investigations, and enforcement; wetland and stream ecology; larval fish taxonomy; and marine bioenergetics. Her fondest memories stem from her biological field and laboratory work, which serve as the core of her environmental interests in how competition and biological interactions can either enhance or degrade the integrity of a community.

Response to Infestations of Caulerpa taxifolia ***in California***

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Biosketch

Mr. Posthumus has been on the staff of the San Diego Regional Water Quality Control Board for 22 years. For most of that time he worked in various regulatory programs implemented by the state and regional water boards. He is currently the watershed management coordinator and the nonpoint source program coordinator for the San Diego Regional Water Board. He is also chair of the Southern California Caulerpa Action Team, the group guiding the response to infestations of *Caulerpa taxifolia* in California.

Abstract

The presentation will describe actions taken in response to the discovery of two infestations of the invasive, nonnative marine alga *Caulerpa taxifolia* in California and highlight lessons learned that might apply to other invasive species response programs.

Arundo Removal in the Santa Ana Watershed

Jeff Beehler
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Biosketch

Dr. Beehler is an environmental project manager at the Santa Ana Watershed Project Authority (SAWPA) in Riverside, California. SAWPA is a joint authority consisting of the Orange County Water District, Eastern Municipal Water District, Western Municipal Water District, San Bernardino Valley Municipal Water District, and Inland Empire Utilities Agency.

Dr. Beehler received his B.A. from Kalamazoo College in Michigan, and his M.S. and Ph.D. from the University of Wisconsin-Madison in Ecology and Population Biology. He has designed and carried out ecological projects in the academic, private, and government sectors. At SAWPA, Dr. Beehler manages environmental restoration and planning projects, including those addressing invasive species removal and endangered species.

Abstract

Arundo (*Arundo donax*), or giant cane, is an exotic, invasive grass that spreads throughout California, including the Santa Ana watershed. The plant forms dense stands of tall cane-like stalks that can reach to a height of over 15 feet in a single season. Stands of invasive Arundo displace native riparian or wetland vegetation, increase risk of wildfire, and use approximately three times the water of native vegetation to fuel its rapid growth.

The Costa-Machado Water Act of 2000 (Proposition 13) provided funding for a number of projects in Southern California, including the removal of Arundo. SAWPA has allocated funding for the removal of Arundo in the watershed. This allocation will allow several local agencies and organizations to remove over 3,000 acres of Arundo and other invasive plants. After removal, the areas will be kept free of invasives until native riparian vegetation can become reestablished. This vegetation provides habitat for numerous species, including several threatened and endangered species. In addition, as native vegetation uses less water than Arundo, more surface water will be available for domestic use.

Tamarisk and Arundo Removal and Control on Cache Creek

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Biosketch

Mr. Lowrey is a graduate of the University of California, Berkeley. His professional background includes over 20 years of experience in agriculture. The Lowrey family's ranch is located in western Yolo County's Capay Valley. As a past Chair of the Yolo County Planning Commission he dealt with aggregate and other mining issues and currently serves on the McLaughlin Reserve advisory committee. He is a founding member of the Cache Creek Conservancy Board of Directors, and works with other community organizations on water and land-use planning issues.

Mr. Lowrey presently serves as executive director of the Cache Creek Conservancy and manager of Cache Creek Nature Preserve. He is a fourth generation landowner along Cache Creek and has many years of experience in project management, including streambank restoration and erosion control using conventional and experimental techniques. He has overseen the development, implementation, and operation of the Cache Creek Nature Preserve since its inception in 1998 and administers other wildlife habitat projects for the Conservancy. He is a member of the California Exotic Pest Plant Council, Team Arundo del Norte and works with the Salt Cedar Consortium.

Abstract

Typical of numerous tributaries to the Sacramento River, Cache Creek has become clogged with Tamarisk and Arundo and the sediment that they trap. Islands have formed in mid stream, anchored by the massive root structures of these exotics. The past 10 years have seen the alarming spread of nonnative invasive species. Arundo (giant reed or false bamboo) and Tamarisk (salt cedar) have wreaked havoc with the riparian vegetation in the southwestern United States by pushing out native species, like willows and cottonwoods, and creating a monoculture (or diculture) of invasives. Lacking natural predators here, they are very opportunistic and will readily invade any disturbed habitat near water. Removal of native riparian plants for whatever reason opens the door for Arundo and Tamarisk, which may take such a fierce hold on one bank or on gravel bars in the creek that they contribute directly to erosion when the water bounces off them and erodes away the opposite downstream bank.

The Cache Creek Conservancy, with funding from the California State Wildlife Conservation Board and CALFED's Watershed Program, implemented a removal and control project on 12 miles of Yolo County's lower Cache

Creek in October 2001. These nonnative invasive species (NIS) contribute to nonpoint source pollution by inducing streambank erosion which increases turbidity, sediment transport, and movement of heavy metals through the system. Imported for ornamental and erosion control uses some 150 years ago, Tamarisk and Arundo are of little habitat value, outcompete native vegetation for resources, cause extreme fire hazards, and tend to create monocultures. In the past, removal and control of salt cedar and giant reed have been time-consuming, expensive projects, often with little success. The Cache Creek Conservancy set out to develop vegetation management methods that are affordable, available to the ordinary landowner, effective, and transferable to other watersheds.

Salt cedar and giant reed control is not an exact science in that many methods have been tried with varying degrees of success. Implementation of agricultural weed control techniques under the mantle of an Integrated Pest Management approach provided conservancy project managers with the most workable framework for approaching the task. Creating a management team that includes farmers, Pest Control Advisors, University researchers, state and federal agency experts, heavy equipment manufacturers, chemical company representatives, the County Agricultural Commissioner, and wildlife biologists gave this project the best basis for success.

Weed control is only one phase of the conservancy's project. Landowners were required to sign 10-year agreements allowing continuing monitoring and follow-up management practices which ensure long-term control. Tamarisk and Arundo both generate tremendous amounts of biomass that must either be removed from the streamway or rendered innocuous. One challenge was to make the excess biomass work rather than being and expensive problem. Small segments of these plants can regenerate entire populations if handled improperly. Once the invasives are removed, streambanks must be evaluated for erosion potential and preventative measures taken if warranted.

The goal of this project is the removal of Tamarisk and Arundo along lower Cache Creek and development of a long-term NIS management program. With solid community support the Cache Creek Conservancy has assembled a group of partners who can make this happen: Wildlife Conservation Board, CALFED, USDA-Agricultural Research Service, Yolo County, Yolo County Flood Control District, and local landowners. Timing is critical with this project because, as mentioned earlier, the populations have reached critical mass and a delay in suppression will result in much larger populations which will mean much higher costs.

Closing Panel

Thursday, November 6

1:30 PM – 3:00 PM

Thursday, November 6

1:30 PM – 3:00 PM

CLOSING PANEL

Moderator

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BIOSKETCH

Celeste Cantú is the Executive Director of the California State Water Resources Control Board. Ms. Cantú received her MPA from Harvard University's Kennedy School of Government and her BA in urban planning from Yale University. Prior to her current position, Ms. Cantú was the Chief Consultant for the Assembly Committee on Jobs, Economic Development, and the Economy. She has also served as the California State Director for the USDA's Rural Development program. For 12 years, Cantú was the Executive Director of the Imperial Valley Housing Authority, and she also served as Planning Director for the City of Calexico.

Steve Carley
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BIOSKETCH

Mr. Carley is the section supervisor with the Washington State Department of Ecology's Water Quality Program's Financial Management Section. He has more than 23 years of experience managing the state and federal water pollution control grants and loans programs available for local governments, Indian tribes, and state agencies in of Washington. Funding programs include the State Revolving Fund, Clean Water Act Section 319 Nonpoint Source Program, Construction Grants/Coastal Cities Program, and the state Centennial Clean Water Fund. He is also responsible for managing the wastewater permit fee collection program for the State of Washington that includes over 4,400 permits. He has a B.A. from the University of Washington.

Rainer Hoenicke
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The Resources Agency
California Legacy Project
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Biosketch

Dr. Hoenicke is an aquatic ecologist. He received his undergraduate degree in Agricultural Sciences at the University of Bonn, Germany, and his Ph.D. in Ecology from University of California, Davis.

Prior to joining the Resources Agency, he managed the San Francisco Estuary Regional Monitoring Program for Trace Substances and was the lead scientist for one of the National Estuary Programs - the Santa Monica Bay Restoration Project. His primary responsibilities at the Legacy Project are to integrate and analyze aquatic biodiversity data needed for conservation decision support and to work with constituent departments to develop indicators with which to identify conservation targets and measure the outcomes of restoration, stewardship, and acquisition programs.

Terry Tamminen
Executive Director
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Biosketch

From his youth in Australia to career experiences in Europe, Africa and all parts of the United States, Mr. Tamminen has observed the natural world, and Man's impact on it, from many unique perspectives.

Mr. Tamminen is a U.S. Coast Guard-licensed ship captain, but his fascination with the undersea world began with a family-run tropical fish breeding business in Australia and continued with studies on conch depletion in the Bahamas, manatee populations in Florida coastal waters, and mariculture in the Gulf States with Texas A&M University.

On land, he managed the largest sheep ranch east of the Mississippi, managed a multimillion dollar real estate company, owned and operated a successful recreational services business, and assisted the West African nation of Nigeria with the creation of their first solid waste recycling program.

In 1993, Mr. Tamminen founded the Santa Monica BayKeeper and served as its Executive Director for 6 years. He also cofounded the California CoastKeeper and Keeper programs in San Diego, Orange County, Santa Barbara County, Ventura County, in the Hopi Nation, and in Baja, Mexico. He currently serves as Chair of the Public Advisory Committee to the Southern California Wetlands Recovery Project and is a member of the U.S. Navy Point Mugu Naval Air Station Restoration Advisory Board; the Los Angeles/Long Beach Harbor Safety

Committee, and on the Board of the Wishtoyo Foundation, a group that preserves natural resources through Chumash Indian traditional teachings.